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Conservation Systems Research

Evaluation of a Mechanical Roller-Crimper and Reduced Glyphosate Rates on Cover Crop Desiccation and Weed Dynamics in Corn and Cotton

RESEARCH PROJECT DESCRIPTION NO. 35

Rolling winter cover.

Researchers

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The Challenge

Historically, cover crop desiccation has used preplant burndown (PP) herbicides prior to planting typical row crops. Previous research has shown that a mechanical roller-crimper may be viable as an alternative kill method for cover crops. Other studies have shown that using a roller-crimper with a half-rate of glyphosate, a typical PP herbicide, was as effective as full-rate herbicide application. Lower glyphosate rates in combination with a roller-crimper may be effective; however, no lower rates have been evaluated. The challenge is to develop new cover crop kill methods that provide

weed suppression in conservation tillage systems and allow for reduction of preplant burndown and/or preemergence herbicides, increasing profitability.

The Experiment

At the Alabama Agricultural Experiment Station's E.V. Smith Research Center near Milstead, rye, black oat, and wheat have been established as winter covers preceding cotton under a conservation tillage system. Covers will be killed with a mechanical roller-crimper, roller-crimper plus various rates of glyphosate (2 to 0.125 pt/acre), and glyphosate alone at the same rates. Cotton will be established in four row (40 in. spacing) plots. Evaluations will include cover crop kill, residue biomass, and cotton yield.

"...using a roller-crimper with a half-rate of glyphosate, a typical PP herbicide, was as effective as full-rate herbicide application."

Rolling. Note wick on front (behind tractor) of roller.